PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0000055121	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/013606	International filing date *(day/month/year)* 01.12.2004	Priority date *(day/month/year)* 04.12.2003
International Patent Classification (IPC) or national classification and IPC A01N25/22, A01N59/24, A01N59/12, A61K33/18		
Applicant BASF AKTIENGESELLSCHAFT et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *sent to the applicant and to the International Bureau)* a total of sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
05.08.2005	09.12.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Molina de Alba, J Telephone No. +49 89 2399-7823

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/013606

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   Description, Pages

   1-12 as originally filed

   Claims, Numbers

   1-9 as amended (together with any statement) under Art. 19 PCT

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-7
	No:	Claims	8,9?

2. Citations and explanations (Rule 70.7):

see separate sheet

1) Reference is made to the following documents:

D1: WO 97/31643 A (WEST AGRO, INC) 4 September 1997 (1997-09-04)
D2: WO 02/054872 A (BASF AKTIENGESELLSCHAFT; GUTHRIE, WALTER, GRAHAM; QURESH, MOHAMMED, SH) 18 July 2002 (2002-07-18)

2) Re Item I

The amendments filed by the Applicant with letter of 03.08.2005 fulfil the requirements of Art. 19(2) PCT, except for the range given in point (3)(b) of Claim 1. This range reads "0 to **5%** by weight", where it should read "0 to **95%** by weight". As this appears to be an obvious error in the light of the letter of the Applicant, which declares that Claim 1 corresponds to original Claim 2, and in the light of the preferred range given in present Claim 3 for the same component, the following examination has been carried out on the assumption that said error has been corrected (Rule 91.1(a) and (b) PCT).

3) The present application relates to an antimicrobial composition comprising:

(I) a mixture of iodide anions and thiocyanate anions,
(ii) periodic acid or a salt thereof, and
(iii) a polymer or copolymer comprising 5 to 100 % by weight of at least one monoethylenically unsaturated monomer comprising nitrogen and/or phosphorous containing groups.

4) Re Item V

4.1 Novelty (Art. 33(2) PCT)

None of the cited documents discloses a composition containing the three components listed in independent Claim 1. The subject-matter of claims 1-9 is therefore regarded as novel.

4.2 Inventive Step (Art. 33(3) PCT)

D1, which represents the closest state of the art, discloses (cf. abstract) **stable** aqueous

germicidal compositions containing 0.01-1.4 wt.% available iodine, 10-125 ppm free iodine, 0.005-0.5 wt.% iodate ion, 0.004-0.5 wt.% **iodide** ion, and 0.1-15 wt.% of **iodine complexing agent**. The composition has a pH between 2 and 5.5, and maintains the starting amounts of available and free iodine throughout **a storage period of at least three months**. As iodine complexing agents, several polymers have been tested (cf. pg. 3, l. 3-10 and tables 1-7): alkylphenol ethoxylates, alcohol alkoxylates, polyalkylene glycol ethers, polyoxyethylene sorbitan monolaureate and monopalmitate, polyvinylpyrrolidone, polyethoxylated polyoxypropylenes, and mixtures thereof. In the examples 1-10, 13, 14, 21-24, and 31-34 the complexing agent is particularly a **polyvinylpyrrolidone** (Povidone K-30).

The subject-matter of the present application differs from the mentioned examples of **D1** in the presence of **thiocyanate** anion and **periodic acid or a salt thereof**. The addition of these further antimicrobial agent lets formulate the problem to be solved by the application as the **provision of stable antimicrobial compositions with improved activity**.

Even though thiocyanate anions and periodates are well-known as antimicrobial agents, particularly in combination with iodide anions (cf. **D2**, abstract), it is surprising that the addition of these two antimicrobial agents does not impair the stability shown for the compositions of **D1**, even in the absence of iodate, as has been demonstrated with the examples of the application. The subject-matter of claims 1-9 may therefore be regarded as inventive.

4.3 Industrial applicability (Art. 33(4) PCT)

Is acknowledged for claims 1-7.

The wording of claims 8 and 9 is not clear enough as to distinguish if they encompass methods of treatment of human or animal body by therapy or not. For the assessment of such methods on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for fist use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.

New Claims

1. An antimicrobial composition comprising

(1) a mixture of iodide anions and thiocyanate anions,

(2) periodic acid or a salt thereof, and

(3) at least one polymer or copolymer comprising as units

(a) 5 to 100 % by weight of at least one monoethylenically unsaturated monomer comprising nitrogen and/or phosphorous containing groups,

(b) 0 to 5 % by weight of at least one monoethylenically unsaturated comonomer comprising acidic groups,

(c) 0 to 75 % by weight of at least one further comonomer, and

(d) 0 to 5 % by weight of crosslinking comonomers.

2. A composition according to claim 1, wherein the amounts of the units of the copolymer are:

(a) 10 to 60 %,
(b) 20 to 70 %,
(c) 0 to 70 %, and
(d) 0 to 5 %.

3. A composition according to claims 1 or 2, wherein the composition is a liquid composition.

4. A composition according to claim 3, wherein the solvent of the composition comprises water.

5. A composition according to claims 3 and 4, wherein the concentrations of the components in the solution are

0,01 to 100 mmol/l periodic acid or salts thereof,
0,005 to 50 mmol/l iodide ions,
0,005 to 50 mmol/l thiocyanate ions, and
0,005 to 10 % by weight polymer or copolymer.

6. A composition according to claims 1 to 5, wherein the composition further comprises another biocidal active compound.

7. A composition according to claims 3 to 6, wherein the composition further comprises a surfactant or emulsifier and the liquid composition is an oil-in-water-emulsion or a surfactant based solution.

8. Use of a composition according to any one of claims 1 to 7 as a microbicide for skin antiseptics; antimicrobial soaps; suntans; disinfection of medical equipment; treatment of swimming pools etc., air-conditioning processes; sanitation of accomodation for man; chemical toilets; treatment of sewage/waste, hospital infectious waste and soil or other substances; laundry; disinfection of animal housing/stables/machinery/footwear, hatcheries, means of transport; fish farming; floors, walls, and equipment in food processing plants; or the manufacture of aseptic packaging material.

9. Use of a composition according to any one of claims 1 to 7 as active component in deodorants, antibacterial skin washes, anti-acne preparations, anti-athletes foot preparations, anti-dandruff preparations, dental preparations, impregnated materials, ophthalmic preparations or sterilants.